

What is claimed is:

1. An ink jet recording medium comprising
an absorbent paper base sheet, and
a three-dimensional porous coating on said base sheet,
said coating comprising a reaction product of polyvinyl alcohol and boric acid wherein the molecule bonds are principally polyvinyl alcohol-boric acid-polyvinyl alcohol bonds,
said coating comprising a sieve or screen facilitating penetration of ink carrier vehicle to said base sheet while holding ink pigment or colorant out on the sieve or screen.
2. A recording medium as set forth in Claim 1 wherein said coating includes an immobilizer.
3. A recording medium as set forth in Claim 2 wherein said immobilizer is glyoxal-based.
4. A recording medium as set forth in Claim 1 wherein said coating includes an ink setting agent.
5. A recording medium as set forth in Claim 4 wherein said ink setting agent comprises a cationic or conductive polymer.
6. A recording medium as set forth in Claim 1 wherein said coating includes a pigment.

7. A recording medium as set forth in Claim 1 wherein said coating is comprised of from about 75 to about 96 parts by weight polyvinyl alcohol and from about 1 to about 6 parts by weight boric acid.
8. A recording medium as set forth in Claim 7 wherein said coating includes from about 0.25 to about 4 parts by weight insolubilizer.
9. A recording medium as set forth in Claim 7 wherein said coating includes from about 0.5 to about 5 parts by weight ink setting agent.
10. A recording medium as set forth in Claim 7 wherein said coating includes from about 0.25 to about 4 parts by weight insolubilizer and from about 0.5 to about 5 parts by weight ink setting agent.
11. A recording medium as set forth in Claim 7 wherein said coating includes up to about 50 parts by weight pigment.
12. A recording medium as set forth in claim 1 wherein said base sheet has a basis weight of from about 30 pounds to about 150 pounds per 3000 square feet.
13. A recording medium as set forth in claim 1 wherein said base sheet is a high gloss supercalendered paper having a basis weight in the order of about 90 to 100 pounds per 3000 square feet.
14. A recording medium as set forth in claim 1 wherein said base sheet is comprised of one or more of chemical, semi-chemical, chemic-mechanical, mechanical and groundwood pulps, size and one or more wet strength additives.

15. A recording medium as set forth in claim 14 wherein said base sheet is manufactured from a furnish comprised of about 50 parts hardwood chemical pulp, about 50 parts softwood chemical pulp, about 25 parts paper machine broke, from about 0.25 to about 2 percent rosin size and from about 0.25 to about 1.5% of one or more wet strength additives.
16. A recording medium as set forth in claim 15 wherein the furnish includes in the order of about 0.25 percent cationic agent.
17. A recording medium as set forth in claim 15 wherein said base sheet has a basis weight of from about 30 to about 60 pounds per 3000 square feet.
18. A recording medium as set forth in Claim 1 wherein said base sheet is sized with rosin and a wet-strength additive and is dimensionally stable.
19. A recording medium as set forth in Claim 1 wherein said base sheet has a basis weight of from about 30 to about 60 pounds per 3,000 square feet.
20. A recording medium as set forth in Claim 1 wherein said coating has a coat weight of from about 1.3 to about 2.7 pounds per 3,000 square feet.
21. A recording medium as set forth in Claim 1 wherein said base sheet has a basis weight of from about 30 to about 60 pounds per 3,000 square feet, and said coating has a coat weight of from about 1.3 to about 2.7 pounds per 3,000 square feet.
22. A coating composition for use in the manufacture of ink jet recording media comprising, in aqueous solution,

a reaction product of polyvinyl alcohol and boric acid wherein the molecule bonds are principally polyvinyl alcohol-boric acid-polyvinyl alcohol bonds,

said coating composition, when applied to a substrate, forming a three-dimensional, porous screen or sieve for penetration therethrough of ink carrier vehicle and hold-out on the screen or sieve of ink pigment or colorant.

23. A coating composition as set forth in Claim 22 comprised of from about 75 to about 96 parts by weight polyvinyl alcohol and from about 1 to about 6 parts by weight boric acid.
24. A coating composition as set forth in Claim 23 including from about 0.25 to about 4 parts by weight immobilizer.
25. A coating composition as set forth in Claim 23 including from about 0.5 to about 5 parts by weight ink setting agent.
26. A method of making a coating composition for use in the manufacture of ink jet recording media comprising the steps of
 - providing coating composition makedown water,
 - heating the water,
 - adding boric acid to the heated water with mixing until the boric acid is substantially completely dissolved in the water,
 - adding polyvinyl alcohol to the boric acid containing heated water and continuing to heat the water until the polyvinyl alcohol is substantially,

completely dissolved in the water and a reaction has taken place between the polyvinyl alcohol and the boric acid such that the molecule bonds in the reaction product are principally polyvinyl alcohol-boric acid-polyvinyl alcohol bonds.

27. A method as set forth in Claim 26 including the step of adding an immobilizer to the composition.
28. A method as set forth in Claim 26 including the step of adding an ink setting agent to the composition.
29. A method as set forth in Claim 27 wherein the immobilizer is glyoxal-based.
30. A method as set forth in Claim 28 wherein the ink setting agent is a cationic or conductive polymer.
31. A method as set forth in Claim 26 wherein the makedown water comprises from about 75 to about 85 percent by weight of the composition, the boric acid comprises from about 0.5 to about 1.0 percent by weight of the composition, and the polyvinyl alcohol comprises from about 15 to about 24 percent by weight of the composition.
32. A method as set forth in Claim 26 wherein the makedown water is heated to a temperature of from about 160°F to about 200°F for boric acid addition and dissolution and is heated to a temperature of from about 200°F to about 210°F for polyvinyl alcohol addition and dissolution.
33. A method of making ink jet recording media comprising the steps of providing coating composition makedown water,

heating the water,

adding boric acid to the heated water with mixing until the boric acid is substantially completely dissolved in the water,

adding polyvinyl alcohol to the boric acid containing heated water and continuing to heat the water until the polyvinyl alcohol is substantially completely dissolved in the water and a reaction has taken place between the polyvinyl alcohol and the boric acid such that the molecule bonds in the reaction product are principally polyvinyl alcohol-boric acid-polyvinyl alcohol bonds,

providing a dimensionally stable absorbent paper substrate,

applying a coating of the composition onto the substrate and forming on the substrate a three-dimensional porous screen or sieve comprised of said reaction product.

34. A method as set forth in Claim 33 including the step of adding an immobilizer and an ink setting agent to the composition before applying the composition to the substrate.
35. A method as set forth in Claim 33 wherein the substrate has a basis weight of from about 30 to about 60 pounds per 3,000 square feet.
36. A method as set forth in Claim 35 wherein the composition is applied to the substrate at a coat weight of from about 1.3 to about 2.7 pounds per 3,000 square feet.

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37. A method as set forth in Claim 33 wherein said base sheet is a high gloss supercalendered paper having a basis weight in the order of about 90 to 100 pounds per 3000 square feet.
38. A method as set forth in claim 33 wherein said base sheet is comprised of one or more of chemical, semi-chemical, chemi-mechanical, mechanical and groundwood pulps, size and one or more wet strength additives.
39. A method as set forth in Claim 38 wherein said base sheet is manufactured from a furnish comprised of about 50 parts hardwood chemical pulp, about 50 parts softwood chemical pulp, about 25 parts paper machine broke, from about 0.25 to about 2 percent rosin size and from about 0.25 to about 1.5% of one or more wet strength additives.
40. A method as set forth in Claim 39 wherein the furnish includes in the order of about 0.25 percent cationic agent.

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